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2. Special work, comprising one or two years: (a) Agriculture special; (b) Nature-study special or normal course.
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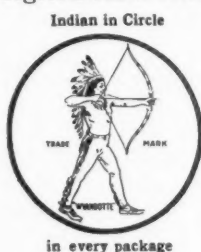
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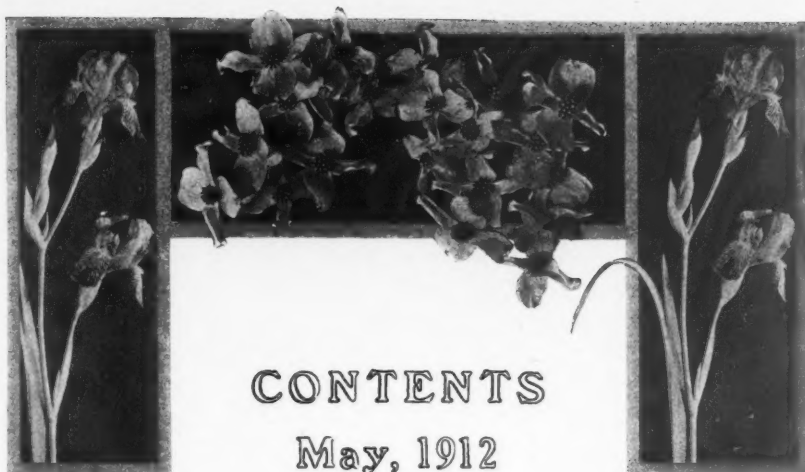
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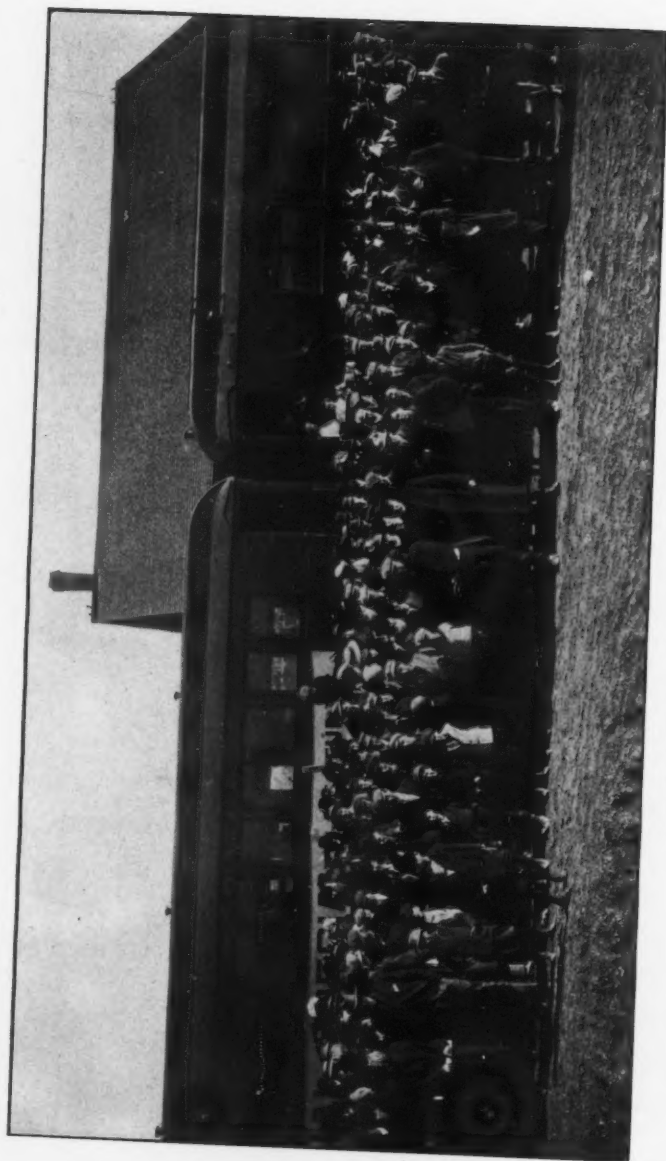
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THE FARM TRAIN AND VISITORS AT PERU, NEW YORK.

The Cornell Countryman

Vol. 9

MAY, 1912

No. 8

THE AGRICULTURAL SPECIAL AS A TRAVELING EXTENSION SCHOOL

By C. H. Tuck

Professor of Extension Teaching in Cornell University

THE educational farm train idea is not new either in this or other States. A modern College of Agriculture has many ways of reaching the "last person on the land." Bulletins, extension schools, reading-courses, exhibits at fairs, coöperative experiments, farmers' weeks, lectures, lecture courses, surveys, visiting and inspecting farms, are among the ways most often used. But occasionally the country needs the physical power of a farm train to awaken the people to ways of self-help. The five educational trains run by the New York State College of Agriculture in the State achieved this result. But the work was nearly all in the form of lectures in the cars during stops of thirty minutes to one hour. It was felt that this was too superficial to be of lasting value. Despite the feeling on the part of many that farm trains had outlived their usefulness, and that they were not adaptable to the much needed contact and direct teaching of extension service, a thoroughly up-to-date train or travelling extension school was equipped to run from April 2d to 12th over the entire line of the D. & H. under the personal supervision of Mr. Ira H. Shoemaker, the Industrial Agent of the Railroad.

The train was extensively advertised by posters, hand bills, press notices, and personal work through agents of the road, masters of granges, school superintendents and principals, postmasters and ministers.

Four passenger coaches stripped of

seats were sent to Ithaca where they were equipped with necessary teaching apparatus.

One coach was fitted with an exhibit of insect pests and fungous diseases of the various farm and orchard crops. Specimens of diseased plants and injurious insects besides spraying rods, nozzles of various types and samples of standard insecticides and fungicides used in combatting these pests were on exhibition. Brief lectures were given on the cause and control of fungous and insect troubles. These lectures were illustrated with actual specimens, many of which could be observed through the twelve microscopes on the car. An opportunity for questions and discussions was provided. Specimens of diseased plants and of plants affected by scale and other insect pests concerning which information was desired were brought to the train.

One of the cars of the Farm Train was of special interest to women. It was furnished with an equipment dealing with Domestic Science. Portions of the car were used to illustrate household decoration and furnishing showing the use of fabrics and colors. Some household equipment was on exhibition showing how house-work could be simplified. The principles of food nutrition were taught by means of charts and demonstrations. Visitors found an exhibit of literature on household economics showing the means of taking up the study outside of the schools. Members of the staff of the Home Economics Department accom-

panied by a senior student were present to explain the exhibits.

A third demonstration car contained an exhibit of special interest to poultry-keepers. Devices for the testing of eggs, a killing and picking box, a model of the gasoline colony brooder house recommended by the College, charts showing methods of grading eggs, plans of buildings and photographs were exhibited to illustrate modern methods. In this car a regular laboratory exercise in which visitors actually learned by doing, was tried with great success. Eggs were supplied visitors who actually graded and tested them under personal instruction. Demonstrations of killing poultry always attracted large crowds. The different feeds in proportionate amounts, composing the Cornell poultry rations were exhibited.

Three dairy cows from the College herd were the centre of interest in the fourth demonstration car which taught up-to-date dairy methods. These cows demonstrated the development of good grades from common stock. The lecturers on dairy subjects discussed the keeping of records, purchase of feeds, breeding to improve milk production, cow-testing associations, balanced rations, and other subjects of vital importance in the profitable management of dairy herds.

The train was assembled at Binghamton with two passenger coaches as lecture halls, a diner and a sleeper for the staff. In a drizzling rain, with its staff of fourteen, the train of eight cars pulled out of Binghamton for its eleven day trip according to the following schedule:

April 2d	Harpursville	2:00 P.M.	to 5:30 P.M.
" 2d	Afton	7:00 P.M.	" 10:00 P.M.
" 3d	Bainbridge	9:00 A.M.	" 12:30 P.M.
" 3d	Oneonta	1:30 P.M.	" 10:30 P.M.
" 4th	Cooperstown	8:30 A.M.	" 12:30 P.M.
" 4th	Worcester	2:00 P.M.	" 6:00 P.M.
" 4th	Cherry Valley	8:00 P.M.	" 10:00 P.M.
" 5th	Cherry Valley	9:00 A.M.	" 12:00 M.
" 5th	Cobleskill	2:00 P.M.	" 10:00 P.M.
" 6th	Altamont	9:00 A.M.	" 12:30 P.M.
" 6th	Albany	2:00 P.M.	" 5:30 P.M.
" 8th	Saratoga	8:30 A.M.	" 12:30 P.M.
" 8th	Glens Falls	1:30 P.M.	" 5:30 P.M.
" 8th	Whitehall	7:00 P.M.	" 10:00 P.M.
" 9th	Granville	8:30 A.M.	" 12:30 P.M.
" 9th	Greenwich	2:00 P.M.	" 10:30 P.M.
" 10th	Port Henry	9:00 A.M.	" 12:00 M.
" 10th	Willsboro	1:30 P.M.	" 5:30 P.M.
" 10th	Plattsburg	8:00 P.M.	" 10:00 P.M.
" 11th	Plattsburg	9:00 A.M.	" 1:00 P.M.
" 11th	Chazy	1:30 P.M.	" 5:00 P.M.
" 11th	West Chazy	5:30 P.M.	" 11:00 P.M.
" 12th	Peru	9:00 A.M.	" 6:00 P.M.

It was predicted that three to five thousand people might visit the train and through them as many more would be reached. To the surprise of every one, approximately 20,000 people visited the train, a large part of whom remained for the full day or half day stop as scheduled.

One of the marked features was the fact that eight to ten of the Cornell staff were continuously in close touch with individuals or small groups so that not only were lectures and demonstrations given, but there was time and

opportunity for the last question from the last man. The nearness to real things, brought forth real questions. The last hour of the stop was used for personal consultation with experts.

In Cherry Valley, Otsego County, the coming of the train changed a community doubtful as to a new school building and a course in agriculture to one enthusiastic for both. In the Champlain Valley the fruit growers for the first time came together at the train to organize for self help in caring for and marketing fruit.

For arousing interest in the countryside and giving answers to specific questions, this train marks the most effective to date and the beginning of

new train or travelling schools that will help much in carrying the necessary teachers and teaching material to the people.



DISCUSSIONS WERE CONTINUED AFTER LEAVING THE TRAIN.

OPPORTUNITIES IN VEGETABLE GROWING

By R. L. Watts

Professor of Horticulture at Pennsylvania State College

DURING the past decade there has been tremendous development in the vegetable growing interests of the United States. The completed census report will show that in many of the states commercial gardening is by far the most important horticultural industry. Southern truck patches have expanded into broad fields. Northern gardens have been increased to large areas. Small ranges of greenhouses devoted to vegetable forcing have been extended to cover acres. Large demands and good prices have encouraged and been directly responsible for this growth.

The present decade, however, will see far greater advancement in vegetable gardening than the past. The agricultural colleges are giving olericulture more attention than ever before. The experiment stations are beginning to appreciate the importance of the

vegetable interests and to include them in their experimental projects. Markets are growing and population increasing. Food articles, especially flour and meats are becoming higher in price, thus encouraging the consumption of garden products.

Attention might be called to some special opportunities. There are hundreds of splendid local markets in the United States which are poorly supplied with home grown vegetables. I could name scores of towns which are supplied mainly with vegetables shipped from distant points. Clean, fresh vegetables from nearby gardens are always preferred. Why should a farmer devote all of his land to general farm crops when he might produce for his home market, vegetables which are far more profitable?

Growing vegetables in general farm rotations offers exceptional opportuni-

ties. Heavy clover sods provide ideal conditions for many of the most important vegetables, such as cabbage, tomatoes, sweet corn, peas, beans, cucumbers, peppers, asparagus, sweet potatoes and both classes of melons. This type of vegetable growing is often called farm gardening and it offers splendid possibilities in many sections. If remote from market, coöperative organization will help to market the crop to the best advantage. The growers should unite in the production of a sufficient quantity to attract buyers so that it will be possible to sell everything at the railroad station for spot cash, rather than through city houses on commission.

The muck soils of New York and other states are especially well adapted to celery, onions, and lettuce. These areas are very expensive to clear and reclaim but when properly managed return large profits. Muck farming is an attractive type of gardening and it offers possibilities for expansion.

Vegetable forcing in the United States is just in its infancy. Modern methods of greenhouse construction, heating and management and the increasing demand for the tender, delicious products of these miniature, glass covered farms, make this highly specialized industry peculiarly attractive. The outdoor products of the South have not interfered as seriously with the greenhouse industry of the North as was feared several years ago. Prices for greenhouse vegetables are not as high as ten years ago but the decreased expense of operation and the opportunity for more extensive production have given business a special impetus. Men now speak of greenhouse extension by the acre rather than by the number of square feet of glass. For example, a statement appeared lately in the *Market Growers' Journal* that Cleveland growers would increase their area of glass this year to the extent of six acres. A Toledo, Ohio, firm recently built a single house, ridge and furrow plan, which covers eleven acres of land. Numerous towns in nearly all of the states would consume

more frame and greenhouse products.

Lettuce is by far the most important forcing crop. It is grown and sold at a price which can be paid by nearly all classes of consumers. The tomato is next in importance. Special American varieties of high yielding qualities will be developed, making it possible to sell at lower prices and thus increasing consumption. The cucumber is largely grown in some sections, especially around Boston, but it should be produced much more extensively in the vicinity of other large cities. Radishes, cauliflower, and rhubarb are also excellent crops for greenhouse culture but the demand for them is very small compared with that for lettuce, tomatoes, and cucumbers.

The overhead system of irrigation makes vegetable gardening much more certain. Drouth often curtails yields but with a never failing supply of water which may be distributed almost as evenly and uniformly as rain there is absolute insurance against loss from dry weather. This system of watering has been the means of doubling profits in some market gardens. It enables the grower to intensify his operations, to improve the quality of his vegetables and it relieves him of much worry and anxiety. Irrigation in the East is no longer an experiment. Hundreds of the most successful growers have installed the overhead system of watering in growing vegetables in the open ground as well as under glass.

Profits in vegetable growing have never been better than in recent years. A Cleveland, Ohio, market gardener and vegetable forcer realized a profit of over \$10,000 from 12 acres of land. A New Jersey trucker with 75 acres has a net profit of \$9 a day, Sundays included, for every day of the year. A Pennsylvania grower, who served several years in an agricultural experiment station says, "There is not a college position in the country that would tempt me." New York has a great number of men who are making handsome incomes growing vegetables. Norfolk and Chicago boast of their millionaire gardeners.

CROP PRODUCTION IN NEW YORK STATE

By E. G. Montgomery

Professor of Farm Crops at Cornell University

PEOPLE living west of the Mississippi River hear very little about the crops produced in New York State, although they hear a great deal about the apples and grapes produced here. The impression gained from this among western people is that New York State is not a very large crop-producing state, especially when at the same time tales are also heard about the number of abandoned farms within her borders.

However, New York is a great crop-producing state and has probably as great potential possibilities for future development as any of the Western States.

The hay crop is the most valuable single crop, being valued at about \$55,000,000, but the total cereal crops are valued at \$34,000,000. The total value of all crops produced in the State are estimated at \$110,000,000. This total value has been increased to



BUCKWHEAT.

Courtesy of the Farm Management Dept.

For fifty years New York has ranked first or second in buckwheat production.

The following table, taken from the Census of 1899, shows the comparative value of the principal agricultural crops raised in New York State:

Hay and Forage	\$55,237,446
Cereals:	
Oats	12,929,092
Corn	9,181,782
Wheat	7,332,597
Buckwheat	2,045,737
Barley	1,402,184
Rye	1,393,313
Potatoes	15,019,135
Dry Beans	2,476,668
Tobacco	1,402,184
Miscellaneous	1,964,643
Total Farm Crops	\$110,384,781
Orchard Crops	10,542,272
Grapes	2,763,711

\$143,000,000 during the last ten years, due mostly to the increase in prices.

Already there is a movement of farmers from the central west, principally from Ohio and Indiana, toward New York State where lands of equal crop-producing power are much cheaper than in that region. It is said that in some counties as many as forty or fifty families have moved in during the past year.

If it were generally known throughout the grain-growing states that New York had great possibilities as a crop-producing state, it is probable that a fair share of the vast stream of money that is now being poured out from the

corn belt states for land in Canada and the Northwest would be turned in this direction. These farmers are all grain and general-crop farmers and while they are interested in fruit growing as a garden crop, they are not necessarily looking for fruit farms, but for crop farms, and this is the reason why they are going into the Northwest and paying from \$30 to \$40 an acre for land which grows principally wheat, flax, and hay, and that with very uncertain climatic conditions. How much better is a crop-producing farm in New York state, where not only crops can be produced but, in addition, fruits of all kinds raised near at hand, and in addition to that a well-developed market, good schools, and desirable social conditions? Probably the best opportunity for buying land that will pay a fair return on the investment as well as to furnish a desirable place of residence, is to be found in the Eastern States and particularly on the better lands of New York State.

The land values in New York State have shown a rapid appreciation in the last ten years, and it is evident that prices here must further advance or else prices in the West must come down, as there is too great a difference in prices when productivity of the land and the market or products are con-

sidered. It is not likely that the Western farmers will readily agree to take less for their land than the present price, which they consider fixed at least. It, therefore, seems very probable that New York State land must make a rapid advance in the next ten years.

I have been making a rather careful study of land values, both east and west, for the past four years and am convinced that a young man can start easier in buying a farm and paying for it in New York State than in any of the western states with their very high-priced land and local markets not as good as they are here. New York State has not begun to develop her own possibilities in crop-producing lines. The hay crop averages about 1.2 tons per acre; corn and oats, 30 bushels and 31 bushels respectively per acre. It is not more than one-half what is being secured by the best farmers in the State. If all the farmers as a class could be induced to do as good farming as the best farmers in each community, we could easily double the annual crop production of the state.

New York agriculture has suffered because her best young men have been for two or three generations going into the newly opened-up country of the West, or been attracted by the high



Courtesy of the Farm Management Dept.

A GOOD CROP OF CORN CAN BE GROWN IN NEW YORK STATE.

prices paid in industrial lines. The agricultural opportunities have now changed in the West since all free land is taken up and the price is very high, and as to opportunities in industrial lines, they do not offer the advantages they did a generation ago when wages were high and agricultural products were low.

Let us all turn our attention to developing New York State agriculture. The opportunity is great: our own resources are not half developed and there is no better outlook for a young man interested in farming than to take part in the great development which is sure to come in the next generation.

TREE PRESERVATION

By G. W. Hendry, '14

Michigan Agricultural College, '09

THE interest which has everywhere been awakened during recent years in behalf of our shade trees, has generated a new set of professional men, practicing a new profession, tree surgery. Examples of their work may be seen in any large park. They fill cavities, amputate limbs, brace weakened and strained joints and do other useful work for the trees.

In reviewing the progress made in this new field, it is interesting to note that some very substantial strides have already been made. On the other hand as is to be expected, no definite standard has yet been established and some of the work is quite indifferent, indeed in many cases the treatment accorded a tree is anything but beneficial. Tree doctors disagree as is shown by a most astonishing lack of uniformity in their methods of procedure and technique. This lack of thoroughness and scientific accuracy has been detrimental to a healthy up-building of this new profession, namely the science and art of tree pathology.

These considerations have led me to think that some few simple statements based upon established principles may lead to a better popular understanding of this important work.

Primarily any treatment of a diseased tree which does not acknowledge the organic nature of both the tree and the parasite, or which fails to comprehend the functions, interdependence and vital nature of the tis-

sues concerned, is more apt to result in harm than in good.

Well directed, effective work demands a right understanding of the essential principles immediately involved. It also demands a most intimate acquaintance with the several other branches of science not intimately concerned. Superficial knowledge and inadequate experience can only lead to erroneous procedure. Now what we actually know about tree disease is surprisingly meagre. It is true we may know all about the systematic position and morphology of the disease producing parasites and at the same time know little of the true nature of the diseases they induce. The disease may be described as the abnormal physiological conditions of the tissues and may be studied only through patiently and carefully conducted infection experiments. Furthermore, innumerable circumstances combine to modify the work of the fungus, and its work is hastened or retarded by innumerable agencies. Again, anomalous symptoms resulting from unfavorable environment appear, frequently so closely resembling a diseased condition as to be most confusing.

Thus it will be seen that in our present knowledge we can not diagnose or prescribe with anything like accuracy.

Fortunately we have the most exact knowledge of the anatomy of trees and

a long series of painstaking investigations in plant physiology have given us a clear insight into the life processes of plants. Plant pathology, however, which deals with the abnormal conditions of plant tissues is a much more recent science and has not yet been developed with anything like the minutiae of plant physiology.

Both science and experience have revealed certain basic therapeutic principles which give us the key to an intelligent treatment of diseased trees. Among these perhaps the most primal is a knowledge that certain conditions are prerequisite to the existence within the host plant, of the disease producing organisms, and if any or all of these conditions are eliminated, the organisms must perish and decay cease. For example, a fungus requires air, moisture, and organic food. So to seal a cavity air and water tight must result in practically making it immune from further destruction.

This forms the nucleus about which practically all dendro-pathological treatments are centered and must be well understood and kept constantly in mind.

What actually causes a living tree to decay and become hollow? It does not just rot of its own accord; it is attacked by a low form of parasitic plant called a fungus. Occasionally a fungus is associated with bacteria with interaction and chemical decomposition, and in nearly every instance the larvæ of wood-boring insects follow, completing the work of destruction.

Fungi propagate chiefly by spores, which are minute single cells, analagous to the seeds of the higher plants and are produced by countless billions. They are so small that a single house-fly may carry a sufficient number lodged in his feet to infect every tree in a small grove. In the first instance these fungus spores gain access to the tree through a wound in the bark, a broken limb, a frost crack, sun-scald, or any injury which exposes the wood beneath

the protective covering of bark. This explains the philosophy of painting wounds when pruning. Having gained access to the tree the spore germinates, developing into a filamentous ramifying fungus body. It grows and develops at the expense of the wood tissues with which it comes in contact, deriving its nourishment from the wood cells by piercing them with minute processes which destroy their structure and leave behind a decomposed wood residue and cavity.

The first work of the tree doctor is to cut out every part of the diseased wood, then cleanse and disinfect thoroughly with a strong fungicide. The cavity should then be coated with a thick application of creosote which, penetrating the wood cells, coats over the albuminous matter upon which the fungi subsist and protects the cells from further injury. The cavity should be completely and solidly filled, and above all, should be sealed as nearly water tight as possible.

Lying just beneath the bark is a peripheral layer of tissue called the cambium. All growth has its origin in the division of the cambium cells, i. e., increase in diameter and all healing tissues are merely outgrowths of the cambium. Since the cambium is all in the outer part of the trunk, just beneath the bark, no internal cavities are healed and there is no internal growth in the tree trunk.

The cambium is a comparatively thin layer of tissue being about the thickness of an ordinary pen line. It is composed of minute thin-walled cells which are entirely incapable of growing over the jagged fracture of a broken limb, or the rough surface of a concrete filling. Hence, in good pruning, limbs are cut off flush with the trunk and are cut smooth and even. A concrete filling should be smooth along the edges where it meets the tree and should articulate accurately with the cambium layer, otherwise, it makes the healing over process a slow one.

THE FARMER AS A BUSINESS MAN

By F. E. Rogers, Sp.

[This speech was awarded second prize in the Third Annual Eastman Stage held February 23d, 1912.]

FARM accounting is a subject with which all of us are more or less familiar, but how many of us actually practice it? Professor Warren in his farm survey work in Tompkins, Jefferson and Livingston Counties finds that only two farmers in every hundred keep an accurate record of their business. These figures are indicative of conditions one hundred years ago. At that time farmers were engrossed mainly with problems of production. The farm must supply all the wants of the family directly. Today other problems are in the foreground; often few of the needs of the farmer's family are satisfied directly from the farm, they are supplied by exchange. The great questions which confront us today are those of buying and selling, which crops possess the greatest exchange value, and how our business fares from year to year. The farmer is first of all a business man and he must employ business methods if he is to keep in the van during these days of keen competition. He cannot plan wisely and well for the future until he knows exactly where he stands at the end of each year.

In the first place, a farmer should know how his investment as a whole is paying. If he finds that the farm is a losing proposition and that profits do not appear after a change in management and a reasonable lapse of time, then perhaps the farm is at fault, or maybe the man himself is not cut out for a farmer. At any rate, the sooner the proprietor knows the true state of affairs, the better.

Not only should the farmer know his net income, he should also be able to tell which of his crops and animals are paying a profit and which are kept at a loss. He should know exactly what each enterprise contributes or deducts from his income. With this knowledge in his possession he has the keys to the whole situation; he is now in a position to drop the unprofitable crops from his

rotation; or, if this is undesirable he can change his methods of management to secure better results, at the same time giving his first and best attention to the most profitable ventures. How is a farmer to secure this information to distinguish the profitable from the robber crops? One can tell very little about the profits of a season by the amount of cash on hand at the end of a year. In the same way, appearances, opinions, or specific instances are unreliable in determining the best paying ventures. The desired information can be secured in no way so easily and accurately as by a simple system of farm accounting. Rightly used, the account books are profit indicators, if you please, of the crops to which they are applied.

Mr. L. A. Toan, of Western New York, wishing to grow the tilled crop in his young orchard, which would return the greatest profit, kept an account with each crop during the year. At the end of the year, he found the net income for potatoes was \$37.00, for beans \$30.00, and for corn \$3.65. Now if accounts kept with these crops in later years verified these results, it is pretty certain that corn was dropped from the cropping scheme of that orchard.

Someone asked B. J. Case why he was a fruit-grower. Mr. Case answered: "Because the ledger made me one," meaning that he became a specialist in fruit because he found from his account books that he derived the greater profit from this source. In other words, accounting enables one to follow up success, and after all that is the secret of every prosperous career. How many of the failures in farming are due to the fact that farmers don't really know which of their branches is a success financially, or rather which is the greatest success. Being ignorant of these facts, they simply go on the wrong track. If one had known that

he made money on sheep or horses; another that he was better adapted to fruit-growing, successful careers would be more frequent. Expressing it in other words, the ledger when rightly interpreted is a mighty force in adjusting round pegs to round holes and square pegs to square holes.

One of the most successful fruit-growers of the state told me recently that he was tearing out his vineyard at the rate of four acres per year and planting the same land to peaches; not because the grapes did not pay, but because the account books showed that a greater profit was derived from peaches. This illustrates what A. C. King of Trumansburg means when he says that from one-half to three-fourths of the problems which a fruit-grower must solve are purely business in nature, and that account books give the only reliable results by which to guide or dictate the business policy.

We should adopt this practice for the purpose of spurring us on to better work. Along this line, we have the testimony of Mr. King, who says that one is constantly alert to cut expenses and to increase his profits after his books show him what he is really making. Does it not stand to reason that one-third of the farmers in Tompkins County, who earn less than hired men's wages, would be stimulated to greater efforts if they saw from their books how little they were making? If farmers actually knew how much it cost to grow an orchard until it began to bear, would they not take better care of so expensive a venture, with the result that there would be fewer neglected orchards through the country? The ledger presents the bare facts. It tells in plain language the degree of our success. The message is often of such a character that we strive hard to secure a more favorable record in the future.

Now, one may rightly ask, if farm accounting possesses such merits, why has it not been more generally adopted by the farmers? When you ask a farmer why he does not keep accounts,

he will say that the system is too complicated and requires too much time for the practical man. These objections can be best overcome by putting forth a simple method of doing this work. Let the farmer take an inventory of all his possessions once each year to determine what he is actually worth. Then by comparing the amount of inventory taken January, 1911, with the one taken January, 1912, he can tell whether he is worth more or less at the end of the year, or in other words whether or not the year has been a successful one. In the next place, he should keep an account with the more important crops. Note down all the expenses of production and deduct them from the proceeds. This is all any farmer needs to do, in order to know how the farm is paying and from which crops he gets the greatest profits. Of the complexity of this method I will leave you to judge. Any school boy who is proficient in arithmetic could perform all the operations involved. A fruit-grower who has a farm of one hundred and forty acres, ninety acres of which are in fruit told me that it took him only ten minutes a day and only three or four days at the end of each year to keep such accounts. Certainly this outlay of time is amply justified by the results.

Recognizing as we do the value of business ability on the farm, is this subject of farm accounting not worthy of a trial? Can we, who are masters in the production of good fruit, consistently omit the most up-to-date business methods from our scheme of management? As well might we attempt to sail without a rudder. Today the most intelligent direction of our business policy is possible only through the use of farm accounts. They have a message for the man on the farm which can be secured through no other channel. They answer the all important questions: What am I good for, and what branch or branches of agriculture will give me the greatest profits? To most of us, such an answer is the assurance of success.



GRAVEL ROAD, BRANCH CO., MICHIGAN

MICHIGAN'S STATE REWARD ROAD LAW

By Frank F. Rogers

Deputy State Highway Commissioner, Lansing, Mich.

MICHIGAN'S state reward road law is unique. No other state has tried anything like it and many people are still looking upon it as an experiment, doubting whether it will really result in a large mileage of well built continuous roads. Its promoters are more than satisfied with the results thus far obtained.

The state reward is a fixed amount per mile paid to the township or county building a road, based on minimum requirements. The amount varies with the class of road that is built.

The least width of turnpike or road grade allowed is 20 feet. The least width of metal track allowed is 9 feet, making a single track road. Greater widths of roadway and metal track are recommended by the State Highway Commissioner for the more heavily traveled roads but they cannot draw any greater rewards.

The Michigan State Highway Department was organized July 1st, 1905, since which time about 1,150 miles of road have been constructed. The steady growth will be seen from the following:

	Per mile.	Miles.
Class A, sand-clay, or its equivalent draws	\$250	20
Class B, gravel draws	500	40
Class C, stone bottom-gravel top draws	750	80
Class D, gravel bottom-stone top draws	750	160
Class E, macadam	1,000	214
Class F, concrete	1,000	276
Roads built in 1905 (6 months)		360
Roads built in 1906		
Roads built in 1907		
Roads built in 1908		
Roads built in 1909		
Roads built in 1910		
Roads built in 1911		



GRAVEL ROAD, JACKSON CO., MICHIGAN.

The roads are divided among the different classes roughly, as follows: 70% gravel, 25% macadam, the remaining 5% covering all other classes.

The roads are built by both townships and counties. The local officials

employ an engineer, who makes the survey and prepares a plan which is sent to the State Highway Commissioner for approval, together with an application for the amount of reward the class of road to be built is entitled



MACADAM ROAD, MARQUETTE CO., MICHIGAN.

to draw. On approval of the plans by the state, full directions are sent to the commissioner for building his road. If, for any reason, the directions are not understood, or the material to be used is questionable, an engineer-

inspector is sent to fully explain the State's requirements.

When completed, the road is again inspected and, if found to comply with the directions given, it is accepted and the state reward paid.

AGRICULTURE IN HAWAII

By Vaughan MacCaughey, '08

Assistant Professor of Botany and Horticulture in the College of Hawaii

THE territory of Hawaii consists of an archipelago two thousand miles long, in the North Pacific Ocean. It is 2,100 miles west of San Francisco and 4,700 miles east of Manila. These islands were discovered by Captain Cook in 1778. The land surface of the eight inhabited islands aggregates about 6,500 square miles, being a little less than the State of New Jersey. The largest island, Hawaii, has an area about the same as Connecticut.

To the northwest of the larger island lies a series of tiny coral atolls and barren rocks, scarcely rising above the surface of the sea. These have a combined area of less than six square miles, and are of no agricultural significance, save as sources of guano.

This chain of islands is of recent volcanic origin. Volcanic activity has evidently moved southeastward along well-defined fissures. The smaller, most deeply eroded islands, having fewest traces of recent volcanic action, are to the northwest, while to the southeast they are larger, less eroded, with fresh lava flows and other indications of late eruptions. Indeed, on Hawaii itself, the largest and most southerly of the islands, are the two great active volcanoes, Kilauea and Mauna Loa. On this island lava flows and other volcanic phenomena occur at relatively frequent intervals.

The soils of Hawaii are composed almost wholly of disintegrated lava rock, and are of recent geologic origin. In the valleys and wooded regions there is a small amount of humus; along certain shores there are lowland

plains of coral origin; but aside from these there is no other soil but that derived from lava. In many places one can observe with striking clearness the various stages in the decay of the original lava-flows. As a rule the soils are very deep, this resulting from either decomposition in situ, or long-continued washing from higher levels.

Hawaiian soils respond quickly to the application of fertilizers, and like all other new soils improve rapidly under rational cultivation. Many of the soils are deficient in lime, but this is easily supplied in the form of coral sand, an excellent form for soil improvement. Dr. Wilcox, special agent in the Federal Experiment Station in Honolulu, says: "When plowed deeply our soils are exceedingly retentive of moisture, as evidenced by the fact that cotton and various other plants thrive in a wild condition where no rain falls except once or twice per year, and then only to the extent of one or two inches. Moreover, good crops of alfalfa and forty bushels of corn per acre have been produced with two inches of rainfall without irrigation. One of the most important points in soil cultivation, which has been demonstrated by the sugar planters, is the great value of deep plowing. Some of our soils are commonly plowed to a depth of *two or three feet*, and are thus put in condition to hold and store the rainfall, for the benefit of the crop. The soils are easily kept in good tilth and great fertility by deep plowing, suitable crop rotation, and the application of fertilizers to replace special elements of plant-food removed by the crops."

The Hawaiian Islands are just within the tropics and the climate, in general, is distinctly sub-tropical. Cool trade-winds and ocean currents reduce the temperature about ten degrees below that of any other part of the world in the same latitude. The prevailing wind is the Northwest Trade, which blows on an average 260 days in the year.

In general there are no sudden changes of temperature, and very slight and gradual seasonal changes. The climate is a warm, bright monotone, without frost, "northerners," thunderstorms, hurricanes, or cyclones. The contrast is striking between this equable condition and the bizarre vagaries of the eastern states' weather. At ordinary elevations the inhabitants of the territory live practically in the open air the year round, since it is almost never necessary to close windows or seek protection against the weather, except for occasional showers.

Considering the small area of the territory the variation in rainfall is remarkable. Each island has a windward, cooler, rainy side, where the annual rainfall may amount to 250 inches or over; and a leeward, warmer, arid side, where the annual rainfall may not exceed two or three inches. These figures indicate the extremes, however, and frequent light, local showers are typical of the Hawaiian climate. The average relative humidity is 72%, which is low for the tropics.

The four million acres that comprise the land area of Hawaii are of the following types, waste land 32%; forest land 25%; grazing land 33%; *arable land* 6%; reclaimable land 4%. Altitude and exposure to the winds are the chief factors in the productivity of the agricultural lands. Of the arable land the most valuable is that now utilized by the sugar plantations. This aggregates about 213,000 acres, on the alluvial flats and lower slopes. Above or adjacent to these areas is a belt, aggregating 1,500,000 acres, too high or too dry for sugar-cane, and so used for grazing. Higher up on the mountain slopes, in many places extending

well up towards the summits are the forests, which constitute invaluable water-reserves for the lower lands. The profound importance of this forest-cover is generally recognized, and nearly all of the forest land is now in territorial or private reservations.

The lands of Hawaii are owned as follows: public lands, 40%; corporately owned, (chiefly sugar plantations), 39%; individual Americans, 10%; individual Hawaiians and part-Hawaiians, 9%; individual Asiatics, 2%. The land was owned, of course, at one time, entirely by the Hawaiian people, who were preeminently farmers and who developed a highly intensive system of cultivation. Arable land and available water was utilized to a maximum degree. The food supply of the early Hawaiians came almost wholly from the fertile lowlands that engirdle the islands, and from the bounteous ocean. Taro, coconuts, bread-fruit, bananas, sweet potatoes, and a few wild fruits of minor importance constituted their vegetable food. Fish, fowl, swine, and dog supplied the remainder of their diet. The pounded corm of the taro, forming a starchy and acetic paste called "poi," was their "staff-of-life," and "fish and poi" is still a by-word for a meal.

The limited area of the islands restricted nomadism; the entire lack of big game cut off hunting; and the absence of grazing domestic animals prevented pastoral life. Thus this peaceful, kindly people, became by, force of circumstance, skillful farmers. Their ancient practices are unfortunately decadent, and little survives but deserted taro-patches, neglected groves of bananas, and slow-dying coconut plantations, to tell of the minute system that once drew tribute from every foot of good land, and was so marvellously adapted to local conditions.

During the middle of the last century there were about 11,000 native land-owners, each occupying and tilling "kuleanas" of from two to three acres in extent. "This division of the land illustrates the fact that the needs of

the common people were filled and a relatively high state of culture developed by individual work on very small tracts; in fact, the native under best conditions can rarely make use of a larger area."

The agricultural industries of Hawaii may be classed as follows:

I. *Field crops.* Sugar cane; rice; sisal; cotton; coffee; rubber; tobacco; vanilla; corn; cassava; castor-bean; alfalfa; sorghum; Para grass; gigeon pea; Jack bean; bamboo; matting plants.

cal agriculture differs from that of the temperate zone in one important particular, which is that most of the tropical crops are perennials and that most tropical products require manufacture before being salable. Tobacco is not salable until it has been fermented; sugar must be extracted from the cane by expensive and intricate milling processes; vanilla, coffee, sisal, and almost every other paying crop requires a larger investment of capital than would be necessary for an equal



AN EXHIBIT IN THE COLLEGE OF HAWAII.

II. *Vegetables.* All the usual vegetables of the temperate zone, most of them being in the market continuously throughout the year; many Asiatic vegetables.

III. *Commercial fruits.* Pineapple; banana; papaya; mango; orange, lemon; lime, pomelo; grape; roselle; avocado; coconut; guava; bread-fruit.

IV. *Flowers and ornamentals.* Great variety of tropic and temperate-zone species; many commercial gardens near Honolulu.

V. *Live Stock.* Dairying; beef-cattle; sheep and goats; swine; horses and mules; poultry; pigeons; honey-bees.

With reference to Hawaiian crops, Jared G. Smith, formerly Special Agent in Charge of the Federal Experiment Station, writes: "Tropi-

acreage of any temperate zone crop, because of the manipulation required to transform the raw material into a finished marketable article. Furthermore, the time limit adds to the necessity for larger investment, in that most tropical crops cannot be harvested in a short season. One must wait three years for vanilla, two or three years for sugar, two years for pineapples, and four or five for coffee, rubber, and sisal."

The status of the various branches of agriculture in Hawaii is indicated by the following table of the chief agricultural exports and imports for the year ending June, 1910:

Product	Exported		Imported	
	Value	To	Value	From
Agric. implements			\$ 30,816	U. S.
Animals.....	\$ 1,530	U. S.	190,502	"
Bread-stuffs	4,558	"	1,904,793	"
			39,622	Japan
Cocoa and chocolate			19,271	U. S.
Coffee, raw	288,507	"	mfgr 18,553	"
Cotton, raw and mfgd	13,718	"	1,766,363	"
Cotton wares			98,519	Japan
Eggs			25,170	U. S.
Fibers and textiles, raw	11,790	"	mfgr 95,866	"
Fish	1,257	"	349,901	"
			145,046	Japan
Fruits and nuts	11,775,050	"	240,861	U. S.
Hay			191,118	"
Hides and skins	139,105	"		
Honey	50,412 ('09)	"		
India-rubber, mfgs	7,938	"	227,795	"
Malt			13,988	"
Meat, etc.				
Beef products.....			70,143	"
Hog and other meat products	5,276	"	374,642	"
Dairy products			403,833	"
Leather	11,021	"	467,525	"
Nursery stock			2,190	"
Rice			2,600	"
Rice and flour			709,673	Japan
Sauce (soy).....			116,605	"
Seeds			9,784	U. S.
Spirits, liquor, etc	3,078	"	565,038	"
Saki and wines.....			137,667	Japan
Starch			15,712	U. S.
Straw and palm-leaf mfgs	6,798	"	30,994	"
Sugar, molasses, syrup			40,658	"
Sugar, brown	35,487,912	"		
Sugar, refined	2,144,830	"		
Tea			15,698	Foreign
			18,702	Japan
Tobacco	22,583	"	659,661	U. S.
Vegetables	9,207	"	233,506	"
			129,111	Japan
Wood and manufacturers	203,649	"	1,418,628	U. S.
Wool and manufacturers	66,509	"	265,279	"

There are numerous institutions in the territory whose work, in whole or part, is of a distinctly agricultural nature. The College of Hawaii, which is a college of agriculture and mechanic arts, corresponds to the state universities of the mainland. This college was established in 1907, and now has a faculty of eighteen; 135 enrolled students; a farm of ninety acres; five buildings; well equipped laboratories; a library of 8,000 volumes; and an annual income at present of about \$60,000. The college has held several short courses; conducted movable schools in the other islands; organized correspondence courses; and thru its Extension Department has fostered the

diffusion of agricultural information throughout the territory.

Considering its limited area, Hawaii is an unusually rich agricultural country. Its farm problems have been solved on a corporate, rather than an individual basis. The land is worked by employees, not by independent farmers. The Oriental does the manual labor; the white man is a supervisor. There is a conspicuous absence of "country life," as that term is used on the mainland. In spite of the unique difficulties of its problems, the outlook towards the future of Hawaii's agriculture is indeed bright. The materials are here for a splendid development of farm lands and farm

institutions. Her past record of agricultural achievement has been one of remarkable successes; Hawaii's future will be a continuance of progress upward, and into higher fields.

(NOTE—In the preparation of the above article the following excellent sources were freely drawn upon—Agriculture in Hawaii, Smith; Hawaii, Its Agricultural Possibilities, Wilcox; Hawaii, Its Natural Resources, Newell.)

STATISTICS OF THE 1912 WINTER COURSE STUDENTS

THE Secretary of the College has compiled some statistics concerning the Short-Course Students which are of interest. A similar record of all students who matriculated in October was published in the March number of THE CORNELL COUNTRYMAN.

These figures show that the Short-Course instruction reaches, mainly,

residents of New York State and that a large number of the students come from the rural districts. Most of them had attended at least a high school and over eighty per cent. of them have had practical farm experience. Another noteworthy fact is that over eighty per cent. were desirous of securing positions. The statistics follow:

	General Agriculture	Dairy Industry	Horticulture	Poultry Husbandry	Home Economics	Totals
No. of men	191	91	56	48		386
" " women	2	1	12	9	32	56
" " students from New York State	176	85	52	56	26	395
" " " " other States	15	6	14	1	3	39
" " " " Foreign Countries	2	1	2		3	8
" " " " places in New York State of over 10,000 inhabitants	43	7	27	28	19	124
" " " " places in New York State of over 5,000 inhabitants	7	2	4			13
" " " " places in New York State of over 1,000 inhabitants	39	13	2	14	1	69
" " " " places in New York State below 1,000 inhabitants	87	63	19	14	6	189
Average age	22	22	26	26	27	24
Nationality:						
Americans	156	78	51	48	25	358
Armenians			1			1
Austrians	1					1
Canadians	1		2		2	5
Dutch		2	1	1		4
English	8	4	3	2	1	18
Germans	8	1	3	2	1	15
Irish	3	2	2			7
Japanese				1		1
Jews	1	2		2	1	6
Norwegians	1					1
Russians	1	1				2
Scotch	1		2	1		4
South Americans	1	1			2	4
Swedes	3					3
Swiss	1					1
Welch	2					2
No nationality given	5	1	3			9

(Continued on page 272)

The Cornell Countryman

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MAY, 1912

The Old and The New

According to the custom of the COUNTRYMAN the present board as a unit severs its connections with the paper with this issue that the new board may start with the June issue to direct the destinies of the paper through another year.

It is hard to describe the mingled feelings of pleasure and regret which are felt at this time; pleasure because we feel that the new board is well capable of shouldering the responsibilities, regret because in reviewing the the past we see the undeveloped plans, the lost opportunities and the errors, and would endeavor to make use of the experience which the years' work has taught us, by trying to improve the paper another year.

It has been our policy to endeavor to reflect as far as possible the ideas and sentiments of the students of this College, to give them the news of their College, and in all cases to stand for and uphold the best interests and

ideals for which the College stands.

We wish to take this opportunity to thank the students and others who have helped us in carrying out our policies and hope that the undergraduates of this College will continue to feel that the COUNTRYMAN is in every sense, of them, by them, and for them, and that they will continue to make it so both by verbal and written communications embodying their ideas and suggestions. It is our hope that the COUNTRYMAN may some day have a building of its own where it can serve the students to the fullest extent and to the best advantage.

In all sincerity do we congratulate the undergraduates of the College on the board elected to office for 1912-13, and our best wishes go with them as they take up their duties. The board as elected for 1912-13 is: Editor-in-chief, Orrin M. Smith, '13; Alumni Notes Editor, Jesse S. Brown, '13; Artistic Editor, H. Errol Coffin, '13; Associate Editors, Dudley Alleman, '14; Hadley C. Stephenson, '14, Frank W. Lathrop, '14; Business Manager, Bruce P. Jones, '13; Assistant Managers, George R. Attridge, '14, J. J. Swift, '14, and A. S. Walker, '15.

We wish to express our sincere thanks to the following men for work done this year: H. F. Wortham, '14; A. M. Grimes, '15; T. G. Stitts, '15; E. C. Heinsohn, '15; H. M. Stanley, '15 and A. Montague, '15.

A Review

The college year, 1911-12, has been an eventful one in the College of Agriculture and as it draws to a close it is interesting to pause for a few moments and reflect on it.

The year opened in October with a very unsettled condition of the admin-

istrative situation, and the College may well congratulate itself that this situation is now in a much more satisfactory form. It was recommended by the Dean that, briefly, all state work at Cornell should comprise one administrative unit. In following out this suggestion a plan was worked out, which resulted in the creation of an Agricultural College Council of eleven members and with certain specific powers, whereby the running of the College has been placed on a much more efficient basis.

As a result of the extensive building operations which have been carried on thruout the year, three large buildings have been added to the Agricultural Campus, and will be ready for occupancy next fall. These buildings are the Home Economics Building, the Poultry Husbandry Building, and the Horse Barn. Work on the new Auditorium is now well under way also.

The re-establishment of the Department of Forestry last fall was hailed with delight and may be counted as one of the really big events of the year. Nothing will be left undone to make the new Department the best in the country.

The dissemination of knowledge throughout the state by means of Farm Trains and Extension Schools may be counted as a very important part of the work of the College this year. This work is vital for it takes the work directly to the farmers themselves which is one of the first duties of the college.

Another means of bringing the College in direct contact with the farmers themselves is thru Farmers' Week, and this year witnessed the most successful Farmers' Week which has ever been held, not only in the number

of visitors which greatly exceeded that of former years, but in the increased number of lectures, demonstrations, conferences, etc., and in the growing interest shown in all these things. The programme was so arranged that a visitor could follow a regular course for the week along any certain line.

The Students' Association has been very active this year, and two phases of their work deserve special mention. The first is the effort to organize the former students of the College into county branches or chapters in such a way that Cornell men in a given section will be mutually helpful and that they may, by thus organizing afford a means for the College to deal directly with a considerable number of former students. It is hoped that the seniors who go out this year will do their utmost to further this work in order to promote the mutual advancement of their community and the College. The second phase of their work consisted of the adopting of a set of resolutions at their annual meeting in Farmers' Week, which were aimed to show the support and appreciation which the students and alumni of the College would give to Dean Bailey in his efforts directed toward the betterment of country life and in his work of reorganization of the College of Agriculture.

The commendable change in the manner of elections of the Agricultural Association to a polled vote in order to secure a more representative vote is worthy of mention at this time.

From this brief summary then, it can be seen that the year has been as successful as it has been eventful. With a new start due to the reorganization; with the increased facilities offered by the new buildings, and with the many other advantages

already enumerated prospects for next year and for many years to follow look bright indeed.

We are very glad to learn that Professor Craig, who has been obliged to give up his

University work for some time on account of illness, is steadily regaining his health and will be able to resume his duties in the near future. Mrs. Craig, who has also been ill, is now we are pleased to announce, on the road to recovery.

STATISTICS OF THE 1912 WINTER COURSE STUDENTS

(Continued from page 269)

WINTER COURSE STUDENTS, 1912—Continued

	General Agriculture	Dairy Industry	Horticulture	Poultry Husbandry	Home Economics	Totals
No. of students who are married.....	10	11	2	6	10	39
" " " " "unmarried.....	183	81	66	51	22	403
" " College graduates.....	11		11	1	5	28
" " students who attended College but did not graduate..	12		8	3	2	25
" " " in Winter-Courses in Agricultural Colleges..	11	9	20	6		46
" " Normal School students.....	1	2	1	3	3	10
" " Theological Seminary students.....			1			1
" " Military Academy students.....	3					3
" " High School students (all or part of course).....	120	37	19	25	19	220
" " Commercial School students.....	10	4	3	7		24
" " Grammar School students.....	5	5		2		
" " Union School students.....	2	11	2			
" " Public School students.....	7	5		8	1	81
" " Private School students.....				1	1	
" " Graded School students.....	1	5				
" " District School students.....	8	14	2	1		
No school given.....	2		1		1	4
College Degrees:						
A.B.....	10		7	1	4	22
Ph.B.....					1	1
B.S.....			4			4
Phar. G.....	1					1
No. of students who have had practical general farm experience.....	167	76	42	28		313
" " " who have had no practical general farm experience.....	23	9	18	21		71
" " " who did not state their practical general farm experience.....	3	7	8	8	32	58
" " " who have had practical experience in the field of work for which they are registered.....	167	69	48	34	15	333
" " " who have had no practical experience in the field of work for which they are registered.....	23	16	16	18	9	82
" " " who did not state their practical experience.....	3	7	4	5	8	27
" " " who want positions.....	108	85	33	37		263
" " " who will return to their home farms.....	51	1	16	12		80
" " " who did not state the position desired.....	34	6	19	8	32	99



CAMPUS NOTES

CALENDAR

Thurs., May 2	Monthly Assembly.
Fri., May 3	Intercollege Baseball, Ag. vs. Architecture.
Mon., May 6	Lazy Club Meeting. Round-Up Club Meeting. Intercollege Baseball, Ag. vs. Arts.
Fri., May 10	Intercollege Baseball, Ag. vs. C. E.
Mon., May 13	Lazy Club Meeting. Round-Up Club Meeting.
Wed., May 15	Intercollege Baseball, Ag. vs. M. E. Intercollege Track Meet
Mon., May 20	Ag. Soph. Class Meeting---Election of Officers. Lazy Club Meeting. Round-Up Club Meeting.
Tues., May 21	Ag. Assoc. Meeting.
Mon., May 27	Lazy Club Meeting. Round-Up Club Meeting.
Sat., June 1	Intercollege Regatta

* * *

The April Assembly as usual was well attended. The program consisted of selections by the Girls' Glee Club and the Men's Glee Club. Dean Bailey was introduced by Acting President Whitney of the Agricultural Association. He first welcomed the Faculty of the Veterinary College who were the guests of the evening and made an announcement concerning the

Summer School of Agriculture. Concerning the proposed change from a B.S.A. degree to a B.S. degree he stated as reasons: first; that a technical degree is not applicable since this college is not strictly a professional school, second that the agricultural course is a science course; third, that the B.S.A. degree does not fit the home economics, the forestry or the rural arts courses; fourth, that we cannot dignify a profession by calling it names, fifth, that the B.S.A. degree does not make one eligible to certain teaching positions in New York State. He then continued in part as follows: "I have often spoken of man's responsibility to the state and tonight I wish to take an opposite point of view, the responsibility of a state to its citizens. A bill has recently been passed remitting taxes on forest lands which are not productive. This bill encourages the planting of forests on land which is suitable for nothing else. The state is beginning to see its responsibility for the betterment of rural conditions. Another good sign is the bill passed to enable county boards of supervisors to raise money for the improvement of the county especially referring to its agriculture. Society is responsible for the keeping of the earth's surface.

"One phase of this responsibility concerns parks. According to the old idea, parks are a condescension to the people. The chief purpose of these parks is to remove blemishes. As a blemish I prefer the old fashioned tin can to the modern advertizing billboard. I believe that no private

enterprise has a right to advertise its business in a public place. In so far as the parks are to remove blemishes they are negative; the positive results are incidental. The modern idea is that large reservations shall be set aside so that all the people may enjoy them.

"The economic vigor of a people depends on what they produce from the soil. It is essential that we should not forget to keep in touch with the soil. We are getting too high above the earth. Antæus was invincible only when his feet were on the ground. Civilization cannot be carried in a flying machine. I question whether the development of the cities indicates permanent civilization. Is it not rather the civilization of the Roman Empire which the Vandals and the Goths destroyed because they were the stronger? It is more important that we remember to keep in touch with nature than that we revise the tariff or carry on other political reforms. The tangible must come before the intangible, fact must come before theory. If it were practical I would have every student work productively for one year before coming to college. I do not care where he works as long as he learns to articulate his college atmosphere with real life. The educated man is now the antithesis of the working man because we have not learned to organize labor educationally. It is the duty of the state to promote the features which will preserve its background.

"At first the state was only a means of protection. Then its chief function became diplomacy and dealings with other states. The modern idea is that the function of the state is to develop its internal resources. The conservation movement and the foundation of the agricultural colleges could not have resulted if the state thought only of its dealings with other states. A military establishment is coming to be an anachronism. The fighting strength is in the soil.

"Internal development is more important than the maintenance of an

army and navy. One per cent. of the total federal appropriations goes to agriculture. We can call it large only as a sum and in comparison with former appropriations. A proposal has been recently made that we protect the Isthmus of Panama by letting the jungle grow up. I believe it is the obligation of the American people to show other nations what can be done with this land in the way of development.

"We must preserve our farms merely as farms. We must have them as open country. It is important that we should preserve our waterfalls and natural phenomena. The time is coming when the state will own such property for the benefit of all the people.

"The parks which I spoke of must not be too refined. Human nature demands a certain amount of the raw and rough. This is one reason for the growth of the Boy Scouts and the willingness with which men go to war. The nature background never becomes a part of a man in silk socks and patent leathers.

"In the future the salvation of the state will be in-so-far as it relates itself to nature. The recognition of this fact will be the next great step forward and not socialism. For this principle is much deeper than socialism. And in this step the farmer will have an important and honorable part."

* * *

The outlook for the present season in intercollege series appears very bright for Agriculture. At present they lead C. E., their nearest rivals, by five points. In the three events still to come off, baseball, crew and track, Ag. will show up well. The track team which won second place last year should win first place or at least repeat its previous performance. Eight veterans of last year's champion baseball team are out this year, and there is some promising new material. The chances for the crew to repeat appear very good. At present there are three combinations practicing. As was the case last year, Ag. has more men out for crew than has any other college.

On the afternoon of March 16, the team of the College of Agriculture again won the intercollege carnival with 31 points as against 17 of the Civil Engineers, their nearest rivals. The following Ag. men won points: S. S. Burdge, '14, second in the Rope Climb; Edward Brailove, '14, third in the backward race; B. H. Frary, '13, and H. L. Page, Sp., first and A. S. Kenerson, '15, and E. C. Viner, Sp., third in the wheel-barrow race; H. H. Knight, '14, first and E. C. Viner, Sp., fourth in the Sack race; T. E. Milliman, Sp., second and B. H. Frary, '13, third in the potato race; and H. H. Knight, '14, and H. L. Page, Sp., first and L. J. Benson, '14, and G. W. Crosier, Sp., second in the elephant race. In the rooster fight, which was not counted in the final score, H. H. Knight, '14, and M. J. Wilkinson, '14, tied with the Arts team, both going to the floor together. The Carnival only counted one-half the number of points usually allotted to an event in the intercollege championship.

* * *

Mr. Ayers is now spending his time in extension work.

* * *

Mr.-L. J. Cross, Department of Agricultural Chemistry, attended Farmers' Institutes at Greenwich and Schenectady, during the week, March 18-23.

* * *

On Monday evening, March 18th, the Sophomore class in Agriculture held one of the best attended and most enjoyable meetings of the year. Dr. J. G. Needham gave a very interesting talk on organization, which was followed by a stunt by Mr. W. B. Hare of the Department of Meteorology. After the class quartette had rendered a few selections, a small "feed" was served.

* * *

The annual banquet of the Junior class in Agriculture was held Friday, March 29, in the rooms of the Home Economics Department. Among the speakers were Professor E. G. Mont-

gomery of the Department of Farm Crops; Prof. John Bently, Jr., of the Forestry Department, and Mrs. H. B. Young of the Home Economics Department. Miss Gertrude Marvin, Albert Horner, '13, M. D. Leonard, '13, and E. G. Eldridge, '13, gave stunts. The banquet was prepared by the women of the class. All those present agreed that this was the most successful function ever held by the class.

* * *

The students in the course of market milk and milk inspection visited a number of farms around Elmira just before the Easter vacation. They visited Atwater Bros. Creamery, Mrs. Susan Crane's Farm, Mrs. Liscun's Willowbroke Farm, and four of Dr. Zimmerman's Farms.

* * *

Mr. E. S. Guthrie now has supervision of the creamery laboratory besides the instruction of the regular students.

* * *

Mr. A. C. King, a well-known fruit grower of Trumansburg, N. Y., was at the college on March 22 for consultation with students. On April 1st, Mr. M. S. Nye, a cattle breeder of Preble, N. Y., addressed the Round-Up Club and on the following day had short talks with a number of students. This is a new custom in the college; it is intended to give students the opportunity of meeting successful farmers and discussing their problems with them.

* * *

The annual Ag. Athletic Rally held on April 16 was for the first time really representative of the college. The programme for the evening which included talks by Lieutenant Twesten, Captains Hook and Ward of crew and baseball, clever "stunts" by T. M. Hunt and M. Rothstein, and music by the Mandolin Club and C. W. Whitney was completed by the most important feature of the evening, the presentation of medals by Dean Bailey to the members of the various Ag teams. At the social hour after the meeting, the stu-

dents enjoyed the apples won at the Indoor Carnival.

Immediately following the rally, the track, baseball and soccer teams held elections at which these men were chosen:

Baseball—Captain, D. D. Ward; manager, E. W. Peterson.

Soccer—Captain, W. Creifelds; manager, L. B. Smith.

Track—Captain, J. R. Van Kleek; manager, E. G. Misner.

* * *

The annual meeting of the New York State Ginseng Growers' Association was held at the College of Agriculture on March 28-29. Professor H. H. Whetzel, in charge, arranged a very

interesting and instructive programme. About 30 growers attended. A regular laboratory study of the ginseng plant and its diseases was conducted during the forenoon of each day, and those who attended were certainly benefited by new observations and ideas. A part of each session was devoted to a discussion of questions of general interest to growers. Also an extensive exhibit of specimens, showing the diseases of ginseng and golden-seal, was carried on.

At the election of officers for the ensuing year, the following were chosen: President, Dr. J. A. Thomas of Moravia; vice-president, A. P. Storrs of Owego; secretary-treasurer, C. M. Goodspeed of Skaneateles.

Lowell Byrns Judson



LOWELL BYRNS JUDSON

The death of Professor Lowell Byrns Judson occurred Thursday, March 7th, at the Albany Hospital, following an operation for appendicitis. The funeral was held at his late home in Kinderhook, Sunday afternoon, March 10th, at 2:30 o'clock.

Professor Judson was born in Lansing, Michigan, December 30th, 1877. He attended Northwestern University, 1896-1898. In 1898 he entered Harvard University and took his A.B. degree in 1900 at Harvard. In 1903 he took the degree B.S.A. at the Michigan Agricultural College, East Lansing, Michigan. From 1903 to 1906 he was Professor of Horticulture at the Idaho Agricultural College, Moscow, Idaho; 1906 to 1911 Assistant Professor of Horticulture at the New York State College of Agriculture, Ithaca, New York. Since leaving Cornell Professor Judson has been associated with his brother in managing their fruit farm at Kinderhook, N. Y.

FORMER STUDENTS



ERNEST KELLY.

Sp., '06—Ernest Kelly was born in Washington, D. C., Nov. 28th, 1883, and was educated in the public schools of this city. After two years of high school, he went to work on a farm in the State of Maine where he stayed until the spring of 1902, entering college as a special student in Agriculture in the fall of that year. He spent four years as a special student, leaving college in June, 1906. While at Cornell he was vice-president of the Ag. Association, chairman of the Ag. banquet committee one year, on the COUNTRYMAN editorial staff two years, and manager of the first uniformed baseball team to represent the College of Agriculture. He also assisted in teaching bacteriology and milk-testing in the Winter-Course for two seasons.

Mr. Kelly worked for a year with the Fairfield Dairy Co., at Caldwell, N. J., where about 650 cows are kept for the production of "certified" and "nursery" milk.

He then equipped and operated a bacteriological laboratory for the Alderney Dairy Co., of Newark, N. J., also having charge of the pasteurizing, bottling, etc. From there he went to Seattle, Wash., where he was Deputy State Dairy and Food Commissioner for a year, accepting a position with the U. S. Dept. of Agriculture in the Spring of 1910. On Jan. 1st, 1912, he was appointed to take charge of the market milk investigations of the department. Mr. Kelly is married and says he has one husky boy that he expects to send to Cornell some day.

'94 W.A.—Irving C. H. Cook is living on the farm where his father was born in 1829 and still resides, at 83 years of age, not only on the same farm but also in the same house at South Byron. Mr. Cook has always been deeply interested in Horticulture particularly, and last year was one of five who engaged with Prof. Whetzel to maintain a field laboratory in his home town in Genesee County. Mr. Cook was honored during the recent Farmers' Week with being elected president of the State Drainage Association, and is a great enthusiast over the importance of, and benefits derived from, the practice of drainage.

'97, W.A.—C. S. Greene is in charge of the \$500,000 farm at the "Sailors Sung Harbor" home at Staten Island, N. Y.

'00, B.S.A.—Mr. G. M. Bently is now State Entomologist in Tennessee and is teaching in the University of Tennessee. He has recently been active in the organization of the State Bee Keepers' Association and is also secretary and treasurer of the State Horticultural Society.

'02, W.D.—J. M. Risley is superintendent of the Monhabie Farm at Bridgeport, Conn.

'04, A.B.—Mr. C. W. Howard who after his graduation entered the field of Economic Entomology has been appointed to a position under the State Entomology Department of Minne-

sota. His work for the summer will be largely in the fight against the grasshopper plague. He had much experience along this line during his five years of entomology work in South Africa.

'05, M.S.A.—W. S. Thornber of Brookings, S. D., has given up College work to take up community development work in the Lewiston Clarkston Valley. He is now the Chief Horticulturist for two large orchard development companies and has about seven thousand acres planted. As a part of this community work Mr. Thornber's Company has organized a practical school of Horticulture which has become very popular in that section.

'05, M.S.A.—Mr. R. S. Woglum has returned from India, after a successful search for a parasite to kill the White Fly, a pest that has cost southern fruit growers millions of dollars and which the government has been trying to eliminate for thirty years. As a result of Mr. Woglum's hunt it is quite probable that the control of the White Fly is now in sight and that it may be completely annihilated in this country. Mr. Woglum is now in Orlando, Fla., carrying on experiments with White Flies and some of the trees infected with the parasites which he brought to the United States from India.

'06, Sp.—A. D. Hoose has changed his address from Duane, N. Y., to "Orchard Farm," Peekskill, N. Y. This is a large fruit farm and Mr. Hoose has taken the position of superintendent.

'06, B.S.A.—F. E. Peck whom we recently reported as having taken a position as bacteriologist for the Hill Dairy Co., Chattanooga, Tenn., is now with the Clover Farm Dairy of Memphis, Tenn., the Hill Co. having discontinued business. Mr. Peck now has charge of the fermented milk department and the output of the plant is 1500 quarts of cultured butter-milk daily.

'06, W.D.—H. W. Middhaugh, formerly butter maker in the department has been promoted to superintendent of milk supply.

'07, B.S.A.—Edward W. Cleaves is manager of a large Holstein farm owned by W. D. Sargent. His address is Somerset, Pa.

'07, Sp.—H. C. Atwater has changed his address from Collinsville, Conn., to Agawam, Mass. He is with his father in the nursery business and it was owing to the very rapid growth of this business that the change of address was made necessary. Mr. Atwater will make his first shipments from the new location this spring.

'09, B.S.A.—Geo. H. Miller, is now connected with the Office of Farm Management, U. S. Department of Agriculture. He will have charge of Special Farm Cost Accounting investigations in Western New York.

'09, B.S.A.—R. L. Rossman is moving from Hillsdale, N. Y., to Bancroft, Iowa, where he and his brother have a large tract of land.

'09, W.A.—G. S. Manrow has accepted a position with Mr. R. E. Herd on the latter's 150 acre small fruit farm at Northeast, Pa.

'10, B.S.A.—Mr. G. T. Scoville gave up his position as teacher in a school in Fresno, Cal., to accept a position with the office of Farm Management, U. S. Department of Agriculture. After April 1st, he will be located at Elmira, N. Y.

'11, B.S.A.—Miss Grace L. Bennett is connected with the Binghamton Tea Rooms, Binghamton, N. Y.

'11, B.S.A.—L. R. Simons is teaching agriculture in the high school at Gowanda, N. Y.

'11, W.D.—I. C. Carpenter has accepted a position with the Sharpless Separator Co. of Westchester, Pa. His work will be in connection with the sale and operation of the Sharpless Milking Machine. He will have general supervision of a given territory and his work will be largely educational.

'12, W.A.—H. S. Halstead has a position as herdsman on the farm of Artemas Ward at Orangeburg, N. Y.

'12, W.A.—John Telfer is superintendent of a farm owned by Francis Newton at Easthampton, Long Island.

GENERAL AGRICULTURAL NEWS

THE NATIONAL DRAINAGE CONGRESS

The National Drainage Congress which assembled in New Orleans, April 10-13 helped to bring the day of the 10 acre intensively cultivated farm near at hand throughout the wet land areas of the United States. In these areas, drainage will open up some 75,000,000 acres of highly productive land to purchase by thrifty farmers.

The lowlands, because of the nitrogen bearing humus are so fertile that a single farmer can cultivate only a very small area. This will mean a dense rural population and consequently many advantages in the way of good roads, rapid transit, nearby schools and churches. The canals necessary for drainage will result in cheap transportation. Drainage will put an end to malaria. It will also aid in lowering the cost of living.

The National Drainage Congress besides demonstrating these advantages is asking the federal government to provide the ways and means necessary for complete surveys, for creation of a comprehensive plan of reclamation by drainage of all the wet land states and for the opening up of navigable drainage canals into which local drainage canals can empty. The government is asked to solve all the interstate problems involved.

Louisiana has solved all the local problems incident to the drainage of her 10,000,000 acres of alluvial prairies, and hundreds of dredges and road building machines are now at work. The money for this work amounting to some \$200,000,000 ultimately, is being supplied through the sale of state protected district drainage bonds. The bond plan will be given particular attention. It has just been approved by the Louisiana Supreme Court.

THE POULTRY CENSUS

The latest government report of poultry on the farms of the United States show 295,880,190 fowls reported from 5,585,032 farms, with a valuation of \$154,663,307. These figures must

not be taken as the sum total poultry business of the country, however, as there are many special poultry farms with large incomes, besides town poultry plants which total largely. All of these according to the estimate of the Secretary of Agriculture, would bring the whole number up to 700,000,000.

THE VALUE OF SOIL SURVEYS

In a report to Secretary Wilson, Prof. Milton Whitney, Chief of the Bureau of Soils says in part, "The soils surveys are of value to the railroads in giving reliable information with regard to the agricultural possibilities of the territories through which they run, and which they wish to develop. They are of benefit to real estate companies because they give an impartial and authoritative basis for dealing in land. Thus, they prevent speculation and fraud. They are of especial value to the Immigration Service in placing foreigners in sections, the soil conditions of which are similar to those with which the immigrant is already familiar. This is an essential condition to the success of most immigrants in agriculture.

"To the farmer, soils surveys are of great value. They give him a means of comparison with soils of other localities; they show which crops are fitted to his land; they give him an advantage in the sale and purchase of land and the securing of loans."

GASOLINE VS. HORSES

Dr. C. W. McCampbell, assistant in animal husbandry at Kansas State Agricultural College, states that many firms in cities are forced to use motor trucks simply because they cannot get good, heavy, sound draft horses. The expense of running these auto trucks is considerable and these companies are ready to exchange them for draft horses as fast as they get desirable ones.

High class draft horses are selling for \$225 to \$500 each, the majority selling for about \$300. The demand is for first-class animals weighing over

1700 lbs., and less than 5% of all the horses received in Chicago during the past year were of this type. The demand for big horses has caused many local buyers to ship common, inferior horses to market. Men who are looking for draft horses will not bid on these horses and therefore many people think the horse market is dull. Farmers are also looking for heavy draft horses. They realize that the heavy draft horse is the cheapest motive power to be found for the average farm.

THE OLEOMARGARINE SITUATION

The Congressional Committee on Agriculture gave hearings on March 15 to the dairymen of the country in opposition to the Lever Bill (H. R. 20,281). The Lever bill repeals the provision of the present law, Section I, which makes oleomargarine subject to the laws of the states into which it is shipped and also permits its coloring in imitation of butter. The hearings were arranged by the National Dairy Union, President George L. Flanders having charge of the presentation of the case.

Ex-Governor Hoard of Wisconsin

said at the oleomargarine hearing of 1900:

"There is no credible evidence to show that oleomargarine is innocuous; no evidence to show that when eaten continuously in place of butter it is not harmful. But there are reports in great abundance to the effect that oleomargarine is harmful.

"There is abundant reason for this. The normal heat of the human stomach is 98 degrees. Butter melts at 92 degrees, 6 degrees below the heat of the stomach (passes into pancreatic emulsion and digestion). Nature designed this fat in its raw state for food.

"Oleomargarine melts at the varying temperatures of 102 and 108 degrees, a temperature no healthful stomach ever attains. As a consequence, this unnatural foreign fat must be expelled by sheer gastric action and force.

"Butter fat is found in the milk of all mammals. Because of this most evident purpose and provision of nature, butter forms a healthful and important article of food in milk, cream and in its separated state.

"No matter what paid chemists may say, no counterfeit, even in its purest state, is wholesome or healthful."

POSITIONS

Position as a teacher of agriculture and manual training in a Minnesota high school. Salary \$1200 for nine months. Applicant should be between 25 and 30. Address Mr. C. W. Barden, 311 E. Washington St., Syracuse, N. Y.

* * *

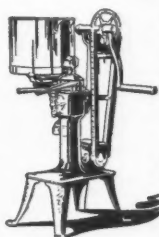
Position as a General Field Manager of one of the largest and most progressive sugar plantations in Louisiana, comprising several thousand acres under cultivation, is now open. The applicant should be familiar with up-to-date agricultural methods and be competent to manage men. Position open till July 1st. For particulars write Cinclare Central Factory, Cinclare, La., or Mr. H. L. Laws, 1405 First National Bank Building, Cincinnati, O.

Position as a teacher of agriculture and mechanical drawing in the Highland High School, Ulster Co., N. Y. Salary \$800-\$1000. Address Mr. H. D. Merritt, Highland, N. Y.

* * *

Position as Specialist in Agricultural Education. Salary \$2500. The candidates must have an educational training equivalent to that obtained in an approved Agricultural college, must have an intimate knowledge of the common and high school system and must be able to command the respect of those who attend the grange meetings and farmers' institutes, by his personal qualities and his knowledge of agricultural subjects. For further particulars address, Civil Service Commission, Albany, N. Y.

The Right Price To Pay For a Cream Separator



WHAT is the right price to pay for a cream separator? The price of the best, of course. The first cost of the best separator is so small, compared

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I H C Cream Separators Dairymaid and Bluebell

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Call on the I H C Dealer

I H C Cream Harvesters are made in two styles—Dairymaid, chain drive, and Bluebell, gear drive—each in four sizes. Let the I H C local dealer give you catalogue and tell you all the facts, or, write for catalogues and any special information you desire.

International Harvester Company of America
(Incorporated)

Chicago

I H C Service Bureau

U S A

The purpose of this Bureau is to furnish, free of charge to all, the best information obtainable on better farming. If you have any worthy questions concerning soils, crops, land drainage, irrigation, fertilizer, etc., make your inquiries specific and send them to I H C Service Bureau, Harvester Building, Chicago, U.S. A.



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The best line for potatoes

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because of the variety of styles and combinations to choose from so that you can have what your conditions need—

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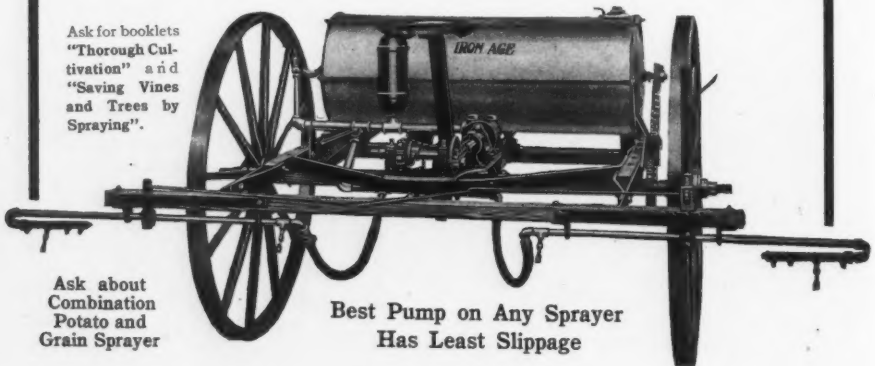
The fact that we are sending them South by **express** is an object lesson that you cannot afford to pass—you cannot tell when blight will strike **your** potatoes or other row crops and when it does come, there is no help.

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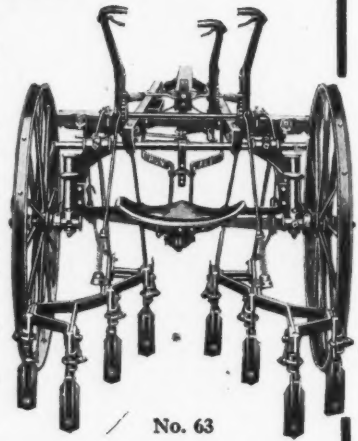
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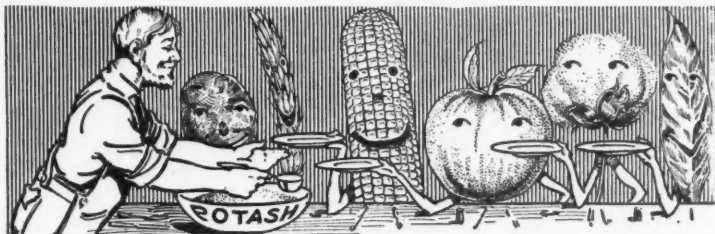
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Best Pump on Any Sprayer
Has Least Slippage





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The acids derived from green manure may make insoluble phosphate of lime more available. But the feldspathic Potash in the soil is less soluble in these acids than in the slightly alkaline waters of the best soils. A little soil Potash becomes available yearly, but not enough to provide for profitable crops. Crops have two periods of Potash hunger. One just after germination and the other when starch formation is most rapid—when the grain is filling. Rational fertilization requires ample available Potash at these periods and if you provide it you will find that Potash Pays. Send for our pamphlet on making fertilizers.

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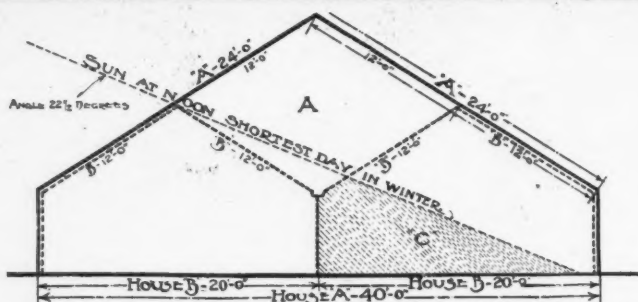
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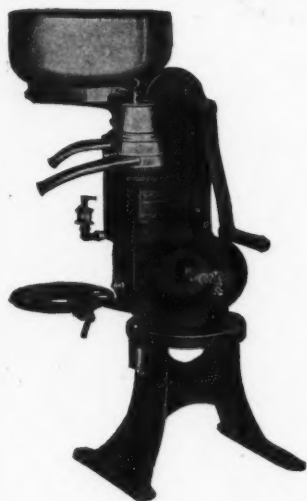
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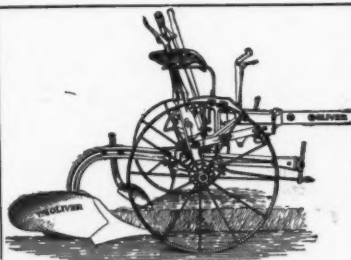
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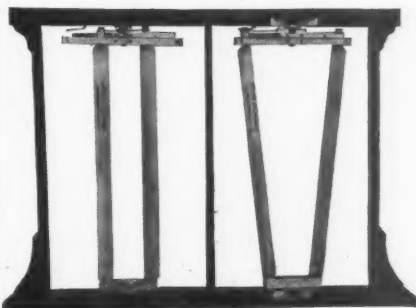
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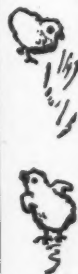
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Vitrified and Salt Glazed Sewer Pipe

Fire Clay Flue Linings

Fire Brick and Chimney Pipe and Fire Clay

Vitrified Clay Building Blocks and Hollow Tile

Wall Plaster and Land Plaster also Hydrated Lime

Drain Tile-Hexagon

We particularly desire to call attention to our excellent
FARM DRAIN TILE and solicit inquiries for prices and
samples.

Samples will be sent free with each inquiry if desired and
we prefer that each new customer receive our sample before
placing an order.

We have a pamphlet entitled "HINTS ON FARM
DRAINAGE" which will be sent free upon application.

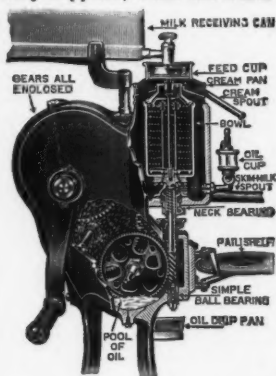
P. O. Box 583, Rochester, N. Y.

In writing to advertisers please mention THE CORNELL COUNTRYMAN

Our Competitors Recognize the Superiority of the
INTERLOCKING
United States Cream Separator

by their recent attempted imitation of its long used oiling system.

The automatic lubricating system of the Interlocking U. S. Cream Separator represents the **most advanced ideas** in separator lubrication. Its gears and spindle bearings are **constantly bathed in a spray of fresh, clean oil**, automatically supplied; while the **worn out, dirty oil in turn is drained off** through



the overflow tube. There is no danger of the bearings running dry. There is no necessity of using the dirty oil over and over after its lubricating qualities are all used up. **All the possible oil value is automatically secured in the most thorough yet economical manner.**

This extraordinary oiling system which is superior to all others—plus **strong accurately made gears** of the very best material and design—**explains why the U. S. Interlocking Cream Separator runs easier and has longer wearing qualities** than any other cream separator made.

If these are the qualities **you would like to have in your cream separator** ask us to give you a free, practical demonstration so that you can see for yourself that our claims are fulfilled in every particular.

To investigate is to be convinced.

Vermont Farm Machine Co., Bellows Falls, Vt.

Distributing Warehouses in every dairy section of the country.

Non-Rusting

The Skimming Sections of the
Interlocking

U. S. CREAM SEPARATORS

are now made of Nickel Silver and cannot rust.

Nickel silver is made especially for us by a celebrated metallurgist and is perfect in its sanitary qualities. Milk and casein do not adhere so tightly to it as to other metals. Non-rusting nickel silver makes the Interlocking Skimmer more durable and easier cleaned than any other skimming device.



The Interlocking style U. S. Cream Separator runs with

Half the Power

and does **twice** the work of older models and should not be confused with them. Its gears are enclosed, dust-proof and automatically lubricated by an oil spray.

It's to your own advantage to investigate. See for yourself. Ask our local agent to give you a free demonstration on your farm, or write us.

Prices for Farm sizes **\$25 and up**, according to guaranteed capacity.

VERMONT FARM MACHINE CO.

Bellows Falls, Vt.

Distributing warehouses
 everywhere

In writing to advertisers please mention **THE CORNELL COUNTRYMAN**

DE LAVAL CREAM SEPARATORS

ARE THE MOST SANITARY

The up-to-date De Laval Cream Separators excel other separators not only in thoroughness of separation, ease of running, simplicity and durability—but as well in the important feature of being the easiest cleaned of all cream separators and the only cream separator which is thoroughly cleanable under ordinary every day use conditions.

The modern DeLaval separator bowl is completely unassembled in cleaning and every part is smooth, visible and easily reachable, without hinge, tube, pocket or crevice anywhere. The whole bowl is washed thoroughly in a couple of minutes.

The frame is smooth and free from recesses and every part is as accessible and thoroughly cleanable as the bowl itself. The gears and bushings are protected from milk or water reaching them, and there is no slop under or around the machine.

QUALITY OF CREAM AND BUTTER DEPENDENT UPON SEPARATOR CLEANLINESS

An unclean separator bowl or filthy separator frame necessarily means a bacteria infected and inferior quality of cream. Buyers of farm separator cream and buttermaking authorities generally are constantly emphasizing this point.

One of the prize winning creamery buttermakers at the last National Dairy Show recently wrote use:

"We are sorry for the use of so many 'mail order' and other inferior separators in our territory. It seems to be almost impossible to clean them, even though the farmers do try—and a good many of them don't even try. We wish you could do more missionary work to get these rotten separators out of the country. It is impossible for any buttermaker to make good butter from spoiled or tainted cream."

Any DeLaval agent will be glad to take a modern DeLaval machine apart for you so that you can see for yourself its simplicity and sanitation of construction and how much more easily and perfectly it can be cleaned than any other separator.

THE DE LAVAL SEPARATOR CO.

NEW YORK

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PRESS OF W. F. HUMPHREY, GENEVA, N. Y.